EXHIBIT K

Advisory Committee on Organ Transplantation

U.S. Department of Health and Human Services

Hyatt Regency Bethesda

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Welcome, Opening Remarks and Introduction of New Committee Members
Velma Scantlebury, M.D., Chairperson, ACOT, and Patricia Stroup, Executive Secretary, ACOT

Dr. Scantlebury welcomed members to the first full meeting of ACOT in 2010 and ACOT's first meeting since 2008. She noted there are 15 new members and 6 returning members. Ms. Stroup, the Executive Secretary, introduced herself and welcomed the ACOT members. Members introduced themselves.

Report and Conclusions of Expert Panel on Circulatory Death Criteria
James Bernat, M.D., Dartmouth-Hitchcock Medical Center

Dr. Bernat described that the Health Resources and Services Administration (HRSA) recruited an expert panel to address circulatory death criteria. The panel membership did not include transplant surgeons, in order to respect the traditional division between death determination and transplantation. The Uniform Determination of Death Act (UDDA) provides the legal definition of death in the United States. An individual is dead who has sustained either: (1) Irreversible cessation of circulatory and respiratory functions; or (2) Irreversible cessation of all functions of the entire brain, including the brain stem. A determination of death must be made in accordance with accepted medical standards. The UDDA, or variation of it, is law in every state.

Based on the UDDA, the neurological criterion is the fundamental criterion of death ("brain death"). The circulatory-respiratory criterion of death is valid because, in the absence of CPR, it leads to fulfilling the brain criterion. Only in the presence of respiratory/circulatory support is the

brain criterion tested. Irreversibility is intrinsic to concept of death, but the UDDA did not define *irreversible*.

The President's Commission used *irreversible* and *permanent* interchangeably; the distinction between *irreversible* and *permanent* is critical to understand. While the two are often used synonymously, there is an important distinction: *irreversible* means something that cannot be undone, or irrevocable. It is absolute and univocal. On the other hand, *permanent* means something that continues without change, is enduring. It is equivocal and contingent. Something that is permanent includes the characteristic of being irreversible and can lead to something that is irreversible.

Permanent is the traditional standard of death, rather than *irreversible*; it is an accident that the term "irreversible" appeared in the statute. Dr. Bernat presented the following example: a patient who is dying of advanced metastatic cancer is admitted for palliative care and found to be without either heartbeat or breathing. He is declared dead by permanent cessation of circulation and respiration without the requirement of proof that these functions have ceased irreversibility. The medical profession has implicitly accepted the permanence standard. Permanence always produces incipient, rapid, and inevitable irreversibility. Thus, removing organs does not cause death.

A deceased individual person can have pulseless activity that does not achieve circulation – the limit is *circulatory*. Arterial-line, Doppler monitoring, or echo-cardiogram may be required to show the absence of circulation. The question arises, however, what duration of cessation of circulation is needed to demonstrate permanence. There are various levels: the Pittsburgh Protocol is for two minutes; the Institute of Medicine is for five minutes; the Society of Critical Care Medicine Ethics Committee and the National Conference on Donors after Cardiac Death's (DCD) standard is for not less than two minutes and not more than five minutes.

While auto-resuscitation data have been meager, more are now available. New studies published in May 2010 are very significant. Horby, et al.'s study divided patients into those who received CPR and those who did not. Among those who were in the ICU and had planned withdrawal of life-sustaining therapy, there were cases of pulseless electrical activity but NO cases of auto-resuscitation. In comparison, with failed CPR (as occurs in uncontrolled Donor Circulatory-Respiration Determination of Death [DCDD]), there were numerous cases of spontaneous auto-resuscitation at up to seven minutes after CPR was abandoned.

With Extra Corporeal Membrane Oxygenation (ECMO), the ECMO catheters are inserted while the patient is still alive and deployed at the moment that death is declared. This improves organ function by reducing warm ischemic time and profusing the brain, thereby preventing the linkage of circulatory and neurological death criteria. It is almost resuscitating the brain through limited CPR; retroactively this negates donor death by preventing the progression to brain destruction from circulatory cessation. The University of Michigan protocol is to insert a thoracic aortic

occlusion balloon to block ECMO blood flow to thoracic organs and brain. This permits progressive brain infarction as if ECMO were not used. It is acceptable because it avoids the problem of retroactive negation of donor death, but is disturbingly invasive.

Turning to heart procurement in DCDD, HRSA sponsored a protocol that was used in successful heart transplantation in three infants by DCDD. Critics raised two questions: is it justified to reduce asystole period to 75 seconds, and does the use of the donor's heart negate the donor's death determination by showing that the loss of cardiac function was not irreversible? The expert panel concluded that the death statute requires absence of *circulatory* function, not cardiac function. Once the donor's circulation ceased permanently, the donor patient is dead when the brain is infracted. Removing and restarting the heart elsewhere has no impact on that individual donor's death status. Therefore, the expert panel found that this process does not affect the death determination and is acceptable.

The "dead donor rule" states that one cannot kill the donor to procure his or her organs. Some scholars have suggested that abandoning the dead donor rule is justified if the patient consents to donation and is beyond harm. The expert panel disagreed and found that doing so would jeopardize public confidence in physicians and the organ donor system.

The panel made the following recommendations:

- Use the term "DCDD"
- Rely on the *permanence* standard of death
- Correctly declared death respects DDR (Death Donor Rule)
- Use blood flow measurements to assess absence of circulation
- Choose a conservative interval of asystole
- Only modified ECMO is acceptable but it requires explicit consent
- Heart recovery in DCDD is acceptable
- Promote uniformity in death determination
- New protocols should have ethical safeguards to increase trustworthiness of donation
- Explore additional research topics

The "C" is important; the panel recommends getting rid of "cardiac" and using "circulatory" instead. It is possible to rely on a "permanent" standard of death, which respects dead donor rule and follows the Uniform Declaration of Death Act.

Areas for future research include expanding analysis to uncontrolled DCDD. HRSA is supporting this and it is being done in Europe. Whereas auto-resuscitation is not an issue in controlled DCDD, it is in uncontrolled DCDD. The expert panel wants to get back together and look at the timing for auto-resuscitation, uncontrolled DCDD, and how long it takes before permanent becomes *irreversible*. The goal is to better standardize DCDD protocols, determine the chronology of brain destruction after cessation of circulation, and study attitudes of physicians and the public about invasive procedures and the permanence standard.

Discussion

Dr. Fung asked if the procedures would be acceptable with explicit consent and if the expert panel expanded explicit consent to include medications. For example, Dr. Fung's OPO is not allowed to use heparin, and he wondered if this would this become acceptable at some point. If procedures can be done with consent, would using medications also be acceptable? Dr. Bernat cautioned that the panel did not address this, so the answer was just his personal opinion. In general, however, his answer was a qualified yes. Consent can accommodate a lot. But, the medicines given cannot interfere with the death determination.

Dr. Fung noted that the benefit of about three minutes is not going to impact use of DCD. There is a need to allow some consideration for improving the organ's functioning, and shaving those few minutes will not accomplish that.

Ms. Cornell said that she agreed with all of the points raised and supported the panel's future research. She asked Dr. Bernat to elaborate on the goal to better standardize DCDD protocols. He responded that such work would address the interval of required observation to ensure that there is no auto-resuscitation. Standardization should be based on data and be made available in guidelines.

Dr. Ettenger (by phone) asked if the age of the donor had an impact, particularly with respect to neonates. The response was that most data on auto-resuscitation excludes neonates. The literature does not include them and they have not been studied. Denver Children's Hospital's heart protocol shortened resuscitation from 2 minutes to 75 seconds but this was based on adult data. Neonates are more resilient and their brains are very plastic, so there are questions about whether it is valid to extrapolate data from adults to this population. Dr. Ettenger suggested that the expert panel might have a subgroup look at that issue and work on it with neonatologists and pediatric neurologists.

Ms. Glazier commented on the conclusion that modified ECMO avoids problems described and suggested it was entering a gray area. Dr. Bernat agreed this was a gray area and that some circulation was happening. Really, one was looking at brain function: there was not any brain circulation happening with the balloon, so using circulation as a surrogate for brain function was still applicable. Ms. Glazier asked if the absence of brain function should be tested. Dr. Bernat responded that this had been discussed by the expert panel, but it was hard to test this in a short period of time. The panel presumed an absence of oxygen to the brain; if that could be documented, then one can assume there is no brain function. If one can show the cessation of inter-cranial circulation, that's the *sine qua non* of brain death.

Dr. Lorber said that this is the beginning of the slippery slope. It seems important to be very careful to define where we are as we approve these potential steps. Dr. Lorber said that putting the balloon in to stop the blood flow to the brain when, if you didn't do that, the patient would be in a different category, seemed to be on the edge. Dr. Bernat agreed absolutely. Whenever a new idea is tested, he noted, we need to study it to see if it is consistent with medical practice and the

law. Mr. Beyersdorf summarized by saying, if the balloon is to stop ECMO from stimulating the heart when, in the absence of ECMO the heart would not resuscitate, when there is a DNR in place, the balloon upholds the DNR.

Dr. Scantlebury asked how facilities select 2 minutes versus 5 minutes. Ms. Cornell answered that it was based on the individual hospital committee, in consultation with their critical care and ethics staff, using IOM guidelines. Ms. Cornell's OPO includes facilities that use 2, 3, and 5 minutes all within the same OPO. Dr. Scantlebury noted that it would be hard to gain uniformity, given that situation. Dr. Bernat noted there is no uniformity in brain death, either; the panel looked at hospital guidelines in the 50 leading neurology departments in the U.S. and found astonishing variations between them. Ms. Kelleher-Crabtree suggested that it was important to think about how this is communicated and consider public perceptions about what happens when someone becomes an organ donor.

Update on OPTN Kidney Allocation Policy: Kidney Transplantation Committee Update
Kenneth Andreoni, M.D., OPTN Kidney Transplantation Committee

Dr. Andreoni noted that he was here on behalf of the OPTN Kidney Committee to talk about kidney allocation. This work began over 6 years ago with the Kidney Allocation Review Subcommittee, which was charged with a complete review of kidney transplantation in the U.S. and internationally. The Subcommittee held a series of public hearings; the hearing findings led to major public forums in 2007 and 2009 to discuss allocation concepts. The Kidney Committee used the feedback from those public forums to develop new allocation concepts with outcome modeling using the SRTR's Kidney-Pancreas Simulated Allocation Model (KPSAM) tool. OPTN has also tried to use common sense, clinical sense, and future flexibility so policy details can be changed as progress in transplantation continues and more information is gathered.

The Committee heard very clearly from the transplant community that the main consideration in any new allocation system should be to prevent extreme mismatches between the potential functioning time of the kidney graft and the expected life years for the recipient patient. An extreme mismatch in either direction is inappropriate and leads to many lost years of potential survival of transplant patients and increased relisting of sensitized patients. The Kidney Committee hoped to start addressing some of the geographic issues through the implementation of a new system (e.g., national implementation of the A2/A2B policies, and dialysis wait time policy). Such a new system will lay the groundwork to better understand geographic variability, which is more complex than just differences in waiting time. The goal was to develop metrics to measure the benefit of candidates receiving kidney transplants for future considerations. Finally, the Committee wanted to make significant changes in the allocation process to minimize high kidney discard rates so candidates can benefit from these transplants.

The major goals around which the Kidney Committee built its proposal are to:

- Match graft and recipient longevity so that the potential survival of every transplanted organ can be realized within biological reason and acceptable levels of accessibility to those on the waiting list.

- Foster or promote graft survival of the kidney transplant for candidates with longest post-transplant survival who are likely to require additional transplants due to early age of End Stage Renal Disease (ESRD).
- Minimize loss of potential functioning years of graft through improved matching of recipient and graft survival.
- Improve system efficiency and organ utilization through the introduction of Kidney Donor Profile Index (KDPI).
- Make comprehensive data better available to patients and transplant programs to guide their renal replacement choices.
- Address differences in accessibility for populations described in the National Organ Transplant Act (e.g., candidates from racial/ethnic minority groups, pediatric candidates, sensitized candidates).

The Committee has a plan for each goal. Rather than have a "bad" kidney designation, the Committee seeks to have more of a continuum description for these organs and to make the description more reasonable and understandable. To achieve these goals, the Committee suggests a potential new allocation system that first utilizes a KDPI to provide additional clinical information about the potential longevity of a kidney graft on a continuous measure, as opposed to the current dichotomous system of Standard Criteria Donor (SCD) versus Expanded Criteria Donor (ECD) grafts.

The majority of kidneys (about 80%) will be allocated based on a wide range of age-matching, in which the organ is first offered to the entire group of candidates who are within 15 years (older and younger) of the donor's age: a 30-year age span. The remaining 20% of kidney grafts, which have the longest estimated potential function, will be allocated first to the group of candidates with the 20% longest estimated post-transplant survival. The KDPI is calculated from donor characteristics only, which are already collected by OPOs: donor age, race/ethnicity, hypertension, diabetes, serum creatinine, cause of death (COD) cerebral vascular accident (CVA), height, weight, DCD, and hepatitis-C virus (HCV). The KPDI is based on the actual outcome of kidney grafts from donors in the United Network for Organ Sharing (UNOS) database over the last several years. The KPDI is an estimate of how well kidneys from donors will function if transplanted into the average recipient.

The Estimated Candidate Post-Transplant Survival is based only on candidate characteristics, were they to receive the average transplant graft: candidate age, candidate diabetes, prior transplant, and time with ESRD. Candidates estimated to have the potential to live the longest after transplant are in the "top 20%" for estimated post-transplant survival. The goal is for patients to get a kidney that "looks like them".

Currently, if an ECD kidney becomes available, it is allocated to the local candidates who agreed to be on the ECD list, rank-ordered by wait time only. If an SCD kidney is available, all the local candidates are eligible, rank-ordered by additional criteria such as waiting time, sensitization points. The new system would take the top 20% of the donor kidneys (with the longest potential function and offer them first to the 20% of local candidates with the longest estimated post-transplant survival. These candidates will be rank-ordered similarly to the current SCD list. The

remainder of the local candidates would be offered this kidney if no one from the first group accepts it. For the large majority of kidneys (about 80%), the kidney will first be offered to the group of candidates who are within 15 years older and younger of the donor's age. These candidates would similarly be rank-ordered as the SCD list is today. If no one from this group of candidates accepts this kidney, the group containing all the remaining local candidates will be offered the kidney graft.

The first step is to estimate the potential function of the kidney, using the KDPI to assess if this kidney has the potential to be one of the top 20% in that Donor Service Area, or if it is among the remaining 80% of donor kidney grafts. If a kidney has a KDPI of 20% or lower, it will be allocated by survival matching; if it has a KDPI over 20%, it will be allocated by estimated survival matching of both kidney and candidate. The majority of kidneys (80%) will be allocated by broad age-matching. The donor's characteristics create the KDPI. Once the KDPI is known, it is also known if the kidney will be allocated by survival-matching or age- matching. It was noted that transplantation is a treatment for ESRD, not a cure. Individuals have various loss-of-life differences based on ESRD. The relative risk of donor kidneys transplanted goes up slowly among the organs transplanted; the difference in the quality between the top 40 and the top 60 kidneys is not huge.

An example was provided of a kidney from a 55-year-old. The kidney has an estimated functioning time that is 60th out of 100. (This means that out of 100 random donors, 59 donor kidneys will last longer than this kidney, and this kidney will last longer than 40 other kidneys.) Therefore, this kidney is not in the top 20% in terms of functioning time and will be allocated by age-matching. Because the donor was 55 years old, the kidney is first allocated to those who are 40 to 70 years old (a span of 15 years younger and older than the donor). If no one in this group accepts the kidney, it can then be offered to everyone else remaining on the list.

In terms of the age range, the group considered 10-, 15-, and 20-year ranges spanning the donor's age. The donor distribution is younger than the candidate distribution; a span of plus and minus (+/-) 10 years resulted in fewer donors being available to the youngest candidates. A span of +/- 20 years resulted in fewer donors being available to older candidates. Thus, a span of +/- 15 years was a compromise that provides a more even number of donors being made available to all candidates.

The Kidney Committee shared results of the SRTR Allocation Simulations, which were based on acceptance behaviors from actual practice within the current allocation system, over the last several years. It is impossible to determine how behavior (patients' and providers') will change in a new system. But, no changes were observed in the proportion of transplants by race/ ethnicity, ABO blood types, or HLA mismatch. Changes were observed in the proportion of transplants by primary diagnosis and recipient age compared to the last few years (but was the same as over the last 20 years). The age correlation of donor to recipient is simulated to be much better with the new allocation rules.

The simulation models cannot estimate the potential to increase the use of middle-age and older donor kidneys that are currently procured but not transplanted. An age-based matching allocation system may help the allocation efficiency of these organs and thereby increase transplantation, especially in older candidates. The age correlation goes up dramatically and, most importantly, the most positive change will be increased use of the kidneys we have.

Moving ahead, the concept document will be released as soon as it has been cleared by HRSA. A communications plan is in development; outreach will include webinars for patients, professionals, and the media. The Committee will consider feedback to the concepts before crafting a policy proposal and seeks early feedback from the community. The Kidney Committee is creating subcommittees to start working on details of how to "rank-order" candidates within the larger groups: ESRD time (or listing at Glomerular filtration rate (GFR) < 20), prior live donor, and sensitization (calculated panel reactive antibodies [CPRA]). The Committee is also creating subcommittees to work on how to incorporate and/or eliminate long-standing regional allocation policies. The Committee is also working with the Pediatric Committee to establish a KDPI value instead of donor age less than 35 and to conduct trials for highly sensitized patients. The Committee is commenting on the Pancreas Committee's proposal for new pancreas allocation system, and working with the Liver Committee on simultaneous liver-kidney (SLK) allocation issues. (The Committee currently does not support the living donor kidney after deceased donor orthotopic liver transplantation (DD OLT) with current outcome policies.)

The current outcome evaluation policies decrease access to high-risk candidates. Programs that are historically aggressive have become more stringent about listing practices due to SRTR's outcome reports. This mathematical calculation of outcomes relative to other programs (rather than a defined level of clinical proficiency) is different than an assessment of all other specialty programs (ventricular assist devices [VADs], lung reduction surgery). ACOT could look at this issue.

Discussion

Dr. Gerber asked what is expected to happen to the disparity within the 15-year age range in the future. Dr. Andreoni responded that this is not specifically known and the system must therefore be flexible so our hands are not tied in the future.

Dr. Wiesner noted that there are similar problems with Life Years from Transplant (LYFT): some regions want exceptions. How is this going to be handled and how will the center effect, which is big in livers, be handled? Dr. Andreoni stated that the goal was to design a system that provides good information and can be used everywhere. One way to impact the center effect would be to not allow patients to reject an ECD versus SCD organ. In some places, all patients are on the ECD list and in others, none are – it is clear that there are centers that are driving these decisions in some cases. The goal is to give both transplant centers and patients a rational range of what they should accept, for example, up to 80 percent, up to the average. SRTR has been working on this and, as a result, we can make estimates for patients, based on their local area, of what type of organ the person should accept, how long the wait will be, and what the average life benefit is

from accepting different KPDI organs. This is an educational process. Dr. Wiesner asked if this could be done without addressing geographic disparities. Dr. Andreoni responded that the goal is a system that works wherever the person is.

Dr. Fung noted the International Congress of the Transplantation Society discussed this issue last week; the discard rate is an issue. Throwing away 30 percent of kidneys is unacceptable. He asked if there was a better way to measure how bad or good an organ is. For example, some centers use biopsies to do this. Is there a way to have a trial to gain a better ability to distinguish better kidneys from the rest? Dr. Andreoni responded affirmatively. KPDI is not tightly tied to age; the goal is to offer KPDI as a better tool for organs than the yes/no decision associated with ECD vs. SCD organs. Everyone agrees that there is a need for better data to make better predictions. There are many things we would like to collect data on, but it's expensive and there are questions about how accurate data are and what is reasonable to collect.

Dr. Zhu asked what happens if the 80 percent group is divided further, into even more 80-20 groups. Dr. Andreoni responded that the system can be molded and adjusted. The goal was to see if there is a group that needs a kidney to last for a long time because the recipient is going to get back on the list if nothing else happens to them.

National Kidney Foundation (NKF) Perspective on the OPTN Kidney Allocation Policy
Dolph Chianchiano, J.D., National Kidney Foundation

Mr. Chianchiano thanked ACOT for the invitation to present, and UNOS for providing an opportunity to offer input on the kidney allocation policy. The NKF has made several presentations to UNOS, including a presentation made to the OPTN Kidney Allocation Review Subcommittee (KARS) on March 11, 2005, and before the UNOS Public Forum in Dallas on February 8, 2007, and in St. Louis on January 26, 2000.

NKF is a multi-disciplinary, multi-disciplinary body with multiple constituencies, all of which have differing perspectives, including transplant candidates and recipients, organ donor families, living donors, and transplant professionals. This variety can make it hard to create a unified viewpoint.

Mr. Chianchiano presented a quotation from a recipient that speaks to the difficulty in understanding some of the proposals that have been made recently: "Whatever the allocation policy becomes, it is imperative to maintain the public's trust in the organ transplantation system in the United States. We believe this means that, before final adoption (of any change in kidney allocation policy), there must be a communications plan explaining in clear, easily understood language, any proposed change in policy and how it will affect access to transplantation for different candidates, and its impact once implemented." LYFT has been described as being too complex to describe to patients and the LYFT concept paper as not being "patient friendly." It is key to maintain the public trust in organ donation in the U.S., so this is important.

Another quotation was presented: "The NKF heartily endorses the concept of the donor profile index. Donor families want to avoid wastage of donated organs. DPI could foster an ECD utilization rate closer to a rate commensurate with the scientific assessment of the usefulness of ECD kidneys for transplantation." As noted, the NKF made a presentation to KARS Committee in 2005 based on its membership survey (n = 790). Over half (52%) oppose first-time recipients getting priority over second- or third-time recipients. The vast majority (86%) opposed considerations such as a patient's employment status (employed vs. not employed, type of employment) and family situation (parent vs. non-parent, married vs. single), being considered in the allocation system.

In terms of changes in the kidney allocation policies, historically, living organ donors have donated to younger transplant candidates. If allocation policy for deceased donor organs is revised to favor younger transplant candidates, living donation could decline and, as a result, the total supply of kidneys for transplantation might decrease. (First-time candidates with a living donor might decide to opt for a deceased-donor transplant, assuming that they can call upon the living donor should a repeat transplant be necessary.) The NKF is not necessarily opposed to age-matching but it is important to develop a message that the individual will get a kidney that "looks like you." Mr. Chianchiano closed by saying that he looks forward to the opportunity to comment on the new Kidney Committee policy.

Discussion

Dr. Wiesner asked Mr. Chianchiano how kidneys should be allocated. Mr. Chianchiano said that, personally, he thought we should do everything possible to eliminate the current wastage of organs and ensure that people can keep the transplants they have so they do not need a second or third transplant.

Ms. Kelleher–Crabtree asked if the NKF membership has differing attitudes based on individual's geography. Mr. Chianchiano responded that people may think differently about these issues in places where the waiting list is longer.

Dr. Fung said there has been a decreasing trend in living kidney donation and asked how NKF could help to reverse this. Mr. Chianchiano responded that NKF has the "End the Wait" campaign, which has a goal to remove the barriers to living donation. ACOT could consider many public policy issues around this such as amending the Family and Medical Leave Act, and providing financial assistance for living donors through tax policy for living donors.

Update on OPTN Liver Allocation Policy: Donor Service Areas

James Eason, M.D., Methodist University Hospital

Dr. Eason spoke about Donor Service Areas (DSA) as the first unit of allocation and noted that the way livers are allocated based on DSA creates a disparity for potential recipients. UNOS' 10 regions are arbitrary geographic regions. Dr. Eason showed a slide indicating areas where donors could go down to a MELD of 15 before getting an organ while someone closer to them with a MELD of 40 lacks access. The situation is worse where there is a single organ procurement organization.

The performance goals from the Final Rule are done by a MELD system: 1) standardized criteria for placing patients on transplant waiting lists; 2) standardized criteria for defining a patient's medical status; and 3) allocation policies that make most effective use of organs, especially by making them available whenever feasible to the most medically urgent patients who are appropriate candidates for transplantation. This last area is still lacking.

The IOM recommended the establishment of organ allocation areas (OAAs) for livers that should generally be established through sharing arrangements among OPOs to avoid disrupting effective current procurement activities. The IOM also made the following recommendations: *Recommendation* 2: Discontinue Use of Waiting time as an Allocation Criterion for [Liver Transplant] Patients in Statuses 2B and 3; *Recommendation* 3: Exercise Federal Oversight; *Recommendation* 4: Establish Independent Scientific Review; and *Recommendation* 5: Improve Data Collection and Dissemination.

Dr. Eason presented performance metrics and distribution across DSAs. There was a wide distribution from 25 eligible donors up to 651 eligible donors in a single DSA. If a patient happened to live somewhere with only 25 donors, it would be difficult for the patient. The consent rate, conversion rate, and collaborative conversion rates vary a lot; for example, some DSAs have 44 percent of donors with SCDs and others have 78 percent.

Dr. Eason discussed waitlist additions by MELD by year, for 2006, for status 1, 1A, and 1B. The number of patients on the waiting list at the end of the year was about 4,500 individuals who needed livers with a MELD over 20 being added per year. Livers are going to less-sick patients and more effective allocation systems are needed. In addition, arbitrary geographic boundaries prevent access to transplantation. There are enough livers to transplant everyone with a MELD over 21, but the organs are not being distributed appropriately.

Solutions:

- Eliminate DSA as first allocation unit (combine OPOs that are small, under-performing)
- Tiered: regional sharing (MELD 20, 25, 30?)
- "Super Regions" (concentric rings; combine existing regions into 4-6 regions)
- Increase lowest eligible MELD score (decrease transplants to those who are less ill; MELD 17).

Discussion

Ms. Jones asked how far surgeons would travel for a liver. Dr. Eason said that it's very dependent on the surgeon and the center; he recently flew from Memphis to Vancouver for a liver.

Dr. Wiesner commented that money is a force. To do a MELD of 15 vs. 30 is a $150,000 difference. Centers are protecting their turf and doing the low MELDs and making a lot of money. Dr. Eason agreed that economic factors come into play in terms of centers' resistance to changing the current allocation.

Dr. Fung agreed that there is a need for a new paradigm for all organs and to move away from the DSA as the unit of distribution. The cardiac side has a system that minimizes this by drawing concentric circles. But, the impact of disparity changes practice; regional review boards, accept exemptions, and so on — people get used to practicing under these constraints. Dr. Fung said that, in his opinion, people are ready for a new model. More people have seen the benefits of changes, including decreased mortality and more stable outcomes. Dr. Eason said that change always brings concern. Even MELD did that; there was a fear that we would only be transplanting people who were going to die anyway.

Dr. Gerber said that one thing that has changed for the worse is that it's more political; this is a real challenge that must be overcome. Dr. Wiesner agreed and asked about a new law that says the liver allocation system cannot be changed unless it goes through a congressional committee. Mr. Durbin confirmed that an OPO with a single DSA succeeded in having language inserted due to its connections with a member of Congress; there now has to be a report to Congress about various issues before any changes can be made in national liver allocation. This does not have the same enforcement effect as a law but will probably impact appropriations in the future. HRSA's Division of Transplantation will do this report if there are to be any changes in the national liver allocation policy.

Ms. Cornell noted that the Association of Organ Procurement Organization's (AOPO) President could comment. Mr. Jeffrey Orlowski, the President of AOPO, spoke from the floor and said that AOPO does not believe that smaller is worse. AOPO is not wed to the concept that the DSA must be the first level of allocation. AOPO supports a healthy public dialogue but does not believe this is an OPO performance issue. Dr. Eason clarified that he did not want to give the impression that small is always underperforming. The problem was that, a patient in a small OPO could be in trouble because there were not enough donors. Mr. Orlowski said that linking the DSA to allocation is the issue, not OPO performance. A lot has to do with the center and the surgeon: how they list, use, and transplant patients. This is a multi-faceted issue and Mr. Orlowski cautioned against focusing on OPO performance. Dr. Eason agreed that was a good point and reiterated that the issue is one of using the DSA as the unit of allocation. Dr. Eason said that a single-center DSA has no reason to be aggressive. If it passes on a 70-year-old liver, it will get offered a younger liver the next day. The DSA creates this problem, and greater access to liver for sicker people will eliminate this issue.

Liver and Intestine Organ Transplant Committee Update

James Eason, M.D., Methodist University Hospital

The Committee's major initiatives related to liver allocation and distribution include: hepatocellular carcinoma (HCC) initiatives, intestine-related initiatives, and pediatric-liver subcommittee initiatives. The Committee's recent policy work includes proposals for Regional Distribution Status 1 and MELD/PELD, which was circulated for public comment in February 2009; the MELD/PELD

Proposal, which has been withdrawn and sent back to the Committee; the Status 1 Proposal, approved in June 2009; the Forum, which was approved by the Board in June 2009: Subcommittees were formed in July 2009 to look at pediatrics and simultaneous liver/kidney issues.

The Forum was held in April 2010 to address concepts related to liver allocation and distribution and "start a new conversation with the community." More than 20 proposals were modeled with liver simulation allocation models (LSAM), plus inferential and statistical analyses: local tiered share (MELD 15 or 17 / MELD 22, 25, 29, 35); regional tiered share (MELD 15 or 17 / 22, 25, 29, 35); share 15 national; concentric circles of 500 miles (MELD 22, 25, 29, 35); concentric circles of 250 miles (MELD 22, 25, 29, 35); thoracic zones (standard, with 29 share, 5 zones); share positive benefit; regional sharing using transplant benefit; and MELD-NA / MELD-NA regional. Dr Eason presented examples of the outcomes for these various models and noted that all models demonstrated an improvement over the current system.

The Liver Request for Information distributed in December 2009 gave background for the Forum and outlined broad concepts; 160 attended; and another 70 participating via LiveMeeting. There were 12 topical presentations and the audience members were polled for responses to various proposals. Various proposals for distribution were shared and audience members provided feedback. In general, most of those polled thought MELD/PELD was doing a reasonably good job in ranking candidates. Conversely, most did not think the DSA was a good system. Most believed that reducing disparities should be a priority for liver transplantation.

Feedback included that the MELD score is not broken and that distribution changes should be made in small, incremental steps. The community was split on many issues. There were strong feelings about geographic inequities caused by using DSAs and regions for distribution. Many comments were received about OPO effectiveness and single-center OPOs. There was support for some tiered sharing, Share 15 National, and the "risk equivalent threshold" (RET) concepts, but there was less support for concentric circles. Strong support was shown for increasing utilization, decreasing discards, and/or expediting placement of livers.

Next steps include the Allocation and Distribution Subcommittee evaluating the proposals and concepts discussed at the Forum. A new Subcommittee was formed on Liver Utilization to address processes for expediting placement, increasing utilization, and reducing discards. In June 2010, the Board passed a resolution: "Resolved, that the Liver and Intestinal Organ Transplantation Committee shall be charged with making recommendations to reduce geographic disparities in waitlist mortality." Other initiatives include joint Pediatric-Liver Subcommittee initiatives, intestine-related initiatives, HCC-related initiatives, and a review of status 1A and 1B cases.

Discussion

Ms. Kelleher-Crabtree asked if the group had received any feedback on the fairly high-profile liver transplant that occurred recently with a well-known Californian who was transplanted in Tennessee. She noted that trying to explain liver policy is hard and situations like that complicate the process. It makes it hard to overcome the perception that certain people could buy livers or

jump the line. For decades, many patients have travelled to different centers, and there is no policy that prevents this. Dr. Barr added that patients are allowed to list at multiple centers but many people lack the access to private jets that lets them move around quickly and get to a center in time. Ms. Kelleher-Crabtree agreed, but commented that this was a negative reality in terms of public perception about transplantation.

Dr. Barr asked why there was not more support for concentric circles; this was an unexpected and negative outcome. Dr. Eason commented that people do not want too much change. He did not think this was a dead issue, but he was also surprised there was not more interest in it. One concern might be about how to accomplish it in places with a smaller population.

Dr. Gerber asked, given that all models were better than the current situation, how much sharing would people be willing to tolerate? Dr. Eason responded, from the Liver Committee's perspective, it appeared that there was the most interested in tiered-sharing based on some MELD score that has yet to be determined. The preferred outcome was not to share if there was a patient locally, in order to prevent livers from passing in the air.

Dr. Wiesner asked if any regional difference were apparent in the voting. Dr. Eason did not know the answer. Dr. Scantlebury asked what the timeline was for coming back together. Dr. Eason said that the group hoped to submit a proposal to the Board this year.

Public Comment

There were no comments from members of the public.

The meeting adjourned at 4:45 pm

Advisory Committee on Organ Transplantation

U.S. Department of Health and Human Services

Hyatt Regency Bethesda

Bethesda, Maryland

August 20, 2010

Reports on Living Donor Studies: Adult to Adult Living Donor Liver Transplantation Cohort Study (A2ALL)

Robert Merion, MD, FACS, Clinical Transplant Director, SRTR

Dr. Merion began by stating the need for innovative solutions. The number of patients on the waiting list has grown dramatically since the 1990s, while the supply had not grown as quickly, resulting in the "liver gap" between the number of those who need transplants and the number of available organs. Strategies for closing this gap include living donors and expanded criteria donors, and donation after circulatory death.

In December 2000, a workshop was held at the National Institutes of Health (NIH) to explore living donor liver transplantation; the result was the Adult to Adult Living Donor Liver Transplantation Cohort Study (A2ALL). The request for proposals was issued in July 2001 that resulted in cooperative agreements with liver transplantation centers and a data coordinating center. NIH has actively participated in this effort. There was not enough funding initially to fund all of the desired centers, so HRSA and the American Society of Transplant Centers provided additional funding. Nine centers participate: University of Virginia; Columbia University; Northwestern University; University of Pennsylvania; University of Colorado; University of California, San Francisco; University of California, Los Angeles; University of North Carolina; and Virginia Commonwealth University. University of Michigan is the data coordinating center. A2ALL has finished the first 7 years (2002-2009) and is in its second phase (or, A2ALL "deux"), initiated late in 2009. In all, there will be 12 years of study.

The principal goal for the first phase was to define the benefits and risks of living donor liver transplantation (LDLT) for recipients and their donors. Although living donor transplants are fairly accepted now, back in the early 2000s, it was questionable if the transplant results were up to par. The study was unique in that it called for follow-up of potential recipients and their donors from the time of the donor's initial evaluation. Typically, the benchmark is forward from the transplant; but, with living donor transplants, you have to account for what happens from the donor evaluation and the transplant. A2ALL started with retrospective chart review for 1998-2003, and initiated prospective cohort study from 2003 -2009. This prospective follow up will conclude later this year. There have been 31 peer-reviewed manuscripts and abstracts from this work.

The study addressed whether there is a survival advantage of living donor transplantation compared to waiting for a deceased donation. A2ALL has shown that there is a benefit from having a living donor. There have been two studies on HCC outcomes, which is an increasingly important indication. A2ALL has shown that there is a significantly higher recurrence rate of HCC in recipients of living donor liver than for deceased donations, although it is not clear why. For HCV, A2ALL found is that there is a learning curve (which will be discussed later) and that, after centers move past this learning curve, HCV cases are similar between living and deceased donors. An interventional trial using the low accelerating dose regimen (LADR) approach to get rid of Hepatitis C before the living donor transplant looks very promising and seems to indicate we can generate a more-rapid clearing of this virus. A2ALL has looked at the exaggerated effect of cold ischemia time; there does not appear to be a significant advantage in terms of the risk of rejection

when receiving a living donor organ. There is substantial morbidity that present unique issues around partial graft (for example, higher rates of hospitalization in general, and for biliary tract pathology, in particular) and that create an additional burden for recipients.

Donor issues include donor evaluation; morbidity; psychiatric complications; laboratory abnormalities; competency; and health-related quality of life (HRQOL). Two-thirds of potential donors are ruled out (this could be due to the patient getting another liver, recipient complications, donor issues, etc.). Donor morbidity is substantial; there is a very real need to define the individual's risk and ensure it is acceptable to the donor and the transplant community. Donors need to be clearly and completely informed about their risks.

A2ALL has published on what appear to be increased psychological and psychiatric complications for the donor (this also happens with kidney donors). There are a lot of theories about this but it is clear that the psychosocial evaluation is very important. One A2ALL study assessed whether the patient really comprehends his or her risk. There is a need not only to establish that the donor is capable of understanding the risks but also to confirm that he or she has understood them. Then, post-donation, studies have looked at whether there is enough information about health-related quality of life for donors and whether that is the same or different from those who do not donate. In other words, is the A2ALL group peculiar and are the results representative? A publication is currently being reviewed that shows the A2ALL group is representative. There are interesting studies on donor and recipient liver regeneration, and on comparing abstracted vs. submitted data for completeness and accuracy. (For most types of data elements, there was very high agreement. For less-common elements, the agreement was less high.)

In terms of mortality, looking at the time from transplant, it is clear that centers have a learning curve (or that experience has an effect). Until centers have seen 20 cases, they have higher mortality rates for transplant recipients with living donors than with deceased donations. Then, after 20, their results align or are better than with DCD. The rate at which living donations occur is much faster than with DCD. Over time, about a third of those with potential living donors end up with a DCD. If you match those post-transplant curves with the mortality curve of those on the waiting list, living donors get their transplants earlier and have higher mortality until their center gets the requisite experience. Among experienced centers, however, almost from the get-go, survival rates are better and mortality rates are lower even than those who receive a deceased donation. Thus, once the center has experience with living donor transplants, the recipient's results are much better than with deceased donation.

A2ALL also looked at the subset of patients with low model for end-stage liver disease (MELD) scores; the rate of death on the wait list is low for these patients. If one adds in the living donor post-transplant rates, they have a bit higher mortality cumulatively than if they had waited or gotten a deceased donation for several months. However, after those months, the death rate is lower than for those who stay on the list. This could be because of advancing MELD scores, because the person died on the list, etc. We think this is a selective group of patients that have risk factors for death other than the three laboratory tests that go into the MELD score.

Living donation continues to be an operation that has a substantial risk of complication. Most complications occur in the first 2 or 3 months after donation. One-quarter to one-third of these donors will have one or more complication, at non-trivial rates: 10% of donors have an infectious complication, for example. Our philosophy is that any complication is serious and that it is very important for potential donors to know about this. Platelet counts drop significantly, on average, in donors overall; this drop is sustained over 3 or 4 years. While they stay within the normal range for platelet count, there is a long-term sustained depression of these donors' platelets. We are concerned that this might represent something related to reconfigurations in the portal venous system related to removal of graft, or other issues related to the donor's procedure.

This is a niche activity; there are a few hundred procedures conducted annually. Some centers have stopped doing it completely. A2ALL has now nine centers, with three that are new: the University of Toronto, Lahey Clinic, and University of Pittsburgh. The goals for the second phase include looking at long-term donor health and long-term donor health-related quality of life. Secondary aims are to build a sample bio-repository; to look at surgical innovation (i.e., intraoperative portal pressure and flow monitoring); and to prevent post-transplant recurrence of HCV and study hepatocellular carcinoma. Studies on donor safety and immunosuppression minimization have been submitted to NIH for funding.

Discussion

Ms. Jones asked if the donor's platelet count recovers. The answer was that, in isolated donors, there are some whose platelet counts gradually come back. For most who have a decline, the counts do not rebound completely. They have a lower platelet count over the long term vs. what they started with.

Reports on Living Donor Studies: Renal and Lung Living Donor Evaluation Study (RELIVE)
Jonah Odim, M.D., NIAID/NIH

Dr. Odim opened by noting that the long-term outcomes of kidney donors are at least comparable to that of the non-donating population. A recent article in the New England Journal of Medicine reported different outcomes, however, in terms of racial variation: U.S. Black and Hispanic kidney donors have significantly increased risks for developing hypertension, diabetes, and chronic kidney disease. Furthermore, the risks in Blacks for developing hypertension compared to Whites post-donation was about 52 percent in terms of increased relative risk; and almost twice for developing end stage kidney disease (ESKD) as well as diabetes. For Hispanics, compared to Whites, the increased relative risk was 36 percent for hypertension; three-fold risk for diabetes; and two-fold for chronic kidney disease.

Some of these observations are consistent with earlier reports. For example, Gibney looked at outcomes for about 62,000 living kidney donors between 1993-2005 who were on the waiting list for to a new kidney. There were also about 102 of those with a single kidney who developed end stage renal disease (ESRD) in that single kidney. Of note, about half of this group was African

American. It appeared that there were wider variations in risk than have been reported. Over the last decade, it has also become clear that the demographics of live kidney donors is changing – they are older, obese, and more diverse both racial and ethnically.

Because of an ACOT recommendation, the Secretary requested NIH to support a research program to investigate outcomes and health care needs for living donors. In response, NIH's National Institute for Allergy and Infectious Diseases (NIAID) released a request for proposals in 2005 to look at epidemiologic research on the outcomes and health needs of live kidney and lung donors. The objectives were to identify existing registries or cohorts of living organ donors; to verify, expand, and complete data of interest contained in (or potentially obtainable for) those registries/cohorts; and to use these data, along with data available in other registries and databases, to conduct exploratory epidemiologic research into risks and outcomes of living organ donors. Awards were made in the summer of 2006: $2.1 million per year for 5 years was provided to three clinical centers (University of Minnesota, the Mayo Clinic, and University of South Carolina) and one data coordinating center (The Arbor Research Collaborative for Health, or Arbor Research). The RELIVE Consortium was formed in late 2006.

The first RELIVE study design is a retrospective chart review of all live donors at the participating sites for overall mortality; cause-specific mortality; and ESRD incidence. Secondary endpoints are cardiovascular and renal morbidity, and adverse events within 6 months after nephrectomy. There are over 8,000 patients at these three sites. Their data are being linked with a variety of other databases to determine the primary and secondary endpoints. The group is now moving to the second stage, which is a cross-sectional / historical cohort. The accrual objectives are to get 6,370 living kidney donors in phase one, and 5,662 in phase two. There are 2,900 community subjects who will act as controls. Primary analyses are the prevalence/ incidence of hypertension (HTN), proteinuria, renal disease, and anemia; the prevalence/incidence of cardiovascular (CV) disease; and quality of life and insurance status. Secondary analyses include differences in primary analyses stratified by race, surgical technique, ECD vs. ideal donors, time from donation, and family history of HTN. In addition, the secondary analysis will include blood pressure, eGFR, urinary protein excretion, and hemoglobin.

A small, observational, cross-sectional study will run in parallel with this study, wherein donors from these centers will be brought back for non-radioactive tracer GFR measurement studies. Primary endpoints include changes in measured GFR from donor nephrectomy, compared to after the first 2 years post-transplant; and changes in measured GFR from early after donation, compared to the first 2 years post-nephrectomy, stratified by a variety of variables (e.g. age, HTN). The study will also look at differences in measured GFR in Black donors compared to White donors matched by age, gender, and time from donation; and incremental differences between measured GFR and estimated GFR before donor nephrectomy, early after nephrectomy, and late after nephrectomy.

There is an informed consent aspect to the Consortium's work in a separate clinical protocol for

kidney donors. This short-term prospective survey for kidney donors will look at whether donors are being pressured to donate; their understanding of the donation process; donation's medical and psychosocial consequences; center and ethnic/racial variability; short- and long-term medical and psychological risks; and variable recipient outcomes.

The story is different with live lung donors than with liver donors; 75 percent of these donors are at one of the Consortium centers. They are working in parallel with the kidney group. The 2002 study is a retrospective cohort study that seeks to involve all former live lung donors from USC and Washington University between 1993- 2006. The primary endpoint is mortality. Secondary endpoints include: peri-operative morbidity; cause of death; lung transplant; quality of life; and psychosocial status.

In summary, RELIVE started later than A2ALL. The observational and retrospective clinical protocols in live kidney and lung donors (RELIVE-01 and -02) have been completed, data analysis is on-going, and results are forthcoming. RELIVE-03 (prospective Informed Consent) is near the accrual target completion. The cross-sectional studies (RELIVE-04, 05 and 06) are still enrolling.

A September 27-28, 2010, meeting will address the state-of-the art and future directions for live kidney donations. This meeting will address the limitations of existing data on outcomes of living kidney donors; assess the need for long-term follow-up of living kidney donors; identify system requirements, infrastructure, and costs of long-term follow-up; and explore options for future development and funding of living kidney donor data collection, metrics, and endpoints.

Discussion

Dr. Fung directed his question to both speakers. He said that the field was in a quandary trying to understand donor safety issues for livers and kidneys — it was not clear we have a good handle on this. There have been two recent donor deaths in the A2ALL group and four reported deaths in kidney donors this year in the U.S. There is no clear strategy to address these rare, but devastating complications. The number of living donors has dropped to less than half its peak (excluding Toronto, where it is even lower). A single death garnering a lot of publicity has a tremendous impact. The fact that there were four kidney deaths with almost no publicity is also problematic. Another problem stems from the way that the outpatient system almost de-emphasizes and complicates our ability to talk to each other.

Dr. Odim said that these are multi-prong, factorial problems. The NIH's objective is the science: assessing what is going on and what the outcomes are, in order to benefit society. These issues cross into issues of oversight, politics, media, regulation – they are complicated to sort out. Clearly, however, entities need to have information, need data, and need science to make informed decisions. Dr. Fung responded that, by the time we answer these questions, there will not be any living donors left. Dr. Odim said that there could be other breakthroughs in other areas, however, that reduce the need for living donors. If a solution for ESKD were found, for example, that would be acceptable. Both progress and science are moving targets.

Living Donor Studies: Harvard Living Donor Feasibility Cohort Study

Julie Lin, M.D.

Dr Lin noted that the Kidney HALO Study (Health After Living Organ donation) was made possible through collaborations with HRSA. The intent was to establish a large, nationally representative cohort of living kidney donors enrolled soon after they donate. The rationale for the study was that the number of living kidney donors has increased over past 20 years (living donation currently represents about 50% of kidney transplants). An increasing number of donors have more advanced age, treated hypertension, and more overweight. It is a concern how to project future donor health and chronic disease risk, given that the data are about past donors who were likely to be healthier when they donated. In addition, most previous follow-up studies on kidney donors were retrospective and entail survival bias. Previous long-term follow-up study populations may not be representative of current/most recent kidney donors.

Two fairly recent and high-profile papers on kidney donor outcomes and the *New England Journal of Medicine* article both provide important information about the safety of living kidney donation. The overall message was that living kidney donation is safe. However, it may be that the donors studied are not representative of current donors today.

Dr. Lin displayed data from the UNOS OPTN database between 1987-2008. The data showed the total number of living donors in the U.S., which peaked a few years ago. The median age of recipients was increasing, along with the media age of living donors, although less dramatically. The proportion of living donors who are 50 years of age or older at the time of donation used to be 12%; now it is 25%. These older donors may have less ability to compensate for their donation.

The overall goal was to establish a longitudinal cohort study of living kidney donors in the U.S. that is nationally representative of current and recent practices, and comprehensive with repeated measures of medical and lifestyle information. The study's questions and goals included: What medical and lifestyle characteristics predict continued health after kidney donation? What is the magnitude of risk (if any) for subsequent CV disease morbidity or mortality conferred by more advanced age, higher baseline blood pressure, or baseline low levels of albuminuria at time of kidney donation? Are baseline immunologic and/or inflammatory status associated with health outcomes in kidney donors?

The study design was to enroll incident living kidney donors within 6 to 12 months of nephrectomy with a goal of enrolling 6,000 participants. The study will contact participants directly every two years with questionnaires about medical issues, quality of life, and diet. Another aspect is the use of web-based questionnaires to facilitate data management and reduce costs. HALO also includes a biomarkers sub-study of 350 individuals that will collect biological specimens (plasma, cells, urine) and perform physiologic studies pre-donation.

Preliminary work has been conducted on the feasibility of this approach. Dr. Lin's center invited its donors to complete the questionnaire after making their donation. Not surprisingly, the center found it was harder to contact these donors who gave some time ago, but the center had a 50-60

percent rate of success in contacting more recent donors. Hence, the study will focus on very recent donors and 80-85 percent are currently agreeing to participate in the study. All 44 of those were asked to participate in the bio-marker study have agreed to do so.

The study completed the IRB and has addressed confidentiality issues. Using the database HRSA provided, the study selected 400 living donors to receive a questionnaire about their interest in participating in this study, and their preferred mechanism for participating. The center has received 100 responses with over 85% of respondents indicating their interest in participating.

Reports on Living Donor Studies: Donor Potential Study

Teresa Beigay, DrPH, Division of Transplantation/HRSA and Karl McCleary, Ph.D, United Network for Organ Sharing

Dr. Beigay stated that the community has become more interested in quantifying performance. True analysis of performance, including goal setting, requires an understanding of the potential for achievement. An accurate description of possible achievement encourages benchmarking along the way, and discourages complacency. This study was intended to enable an accurate characterization of the actual donor potential in the U.S., including SCD, ECD, and DCD. It occurs through the OPTN contract.

Dr. McCleary described the proposed approach to examining deceased donor potential. The new center started in May 2010 with a mission to improve transplant systems through integrated system approaches that provide evidence-based solutions to complex problems affecting transplantation. It will identify evidence-based approaches that can be translated into practice, then disseminated and evaluated.

The research question is what is the actual potential for deceased organ donation in the U.S. Corollary research questions include: why are certain aspects of the deceased donor organ system changing; where will the deceased donor system head if no new actions are taken; how else can the deceased donor system behave, if different decisions are made; and who has the power to move the deceased donor system in a better, more sustainable direction? The objectives of the study are to: compile descriptive information about characterizing deceased donor potential in the U.S.; identify the number of possible deceased donors and the types of donation for which they are suitable; explore SCD and ECD donor potential; examine potential for donation after cardiac death; allow for modifications in deceased donor organ categorization as scientifically and/or clinically appropriate; and estimate trends in deceased donor potential over the next 5 to 10 years.

The study will take a systems approach, which is important for a number of reasons. Dr. McCleary stated the belief that transplantation can inform other aspects of chronic care delivery in the U.S. because it intersects other vital aspects of chronic care delivery. According to the National Center for Health Statistics, in 2007, there were 2.4 million deaths in the U.S. and the total number of deceased organ donors is a very small number of those deaths. Looking at UNOS' data on the

pattern of deceased donors over a 20-year period, this is a growing but small number. Such challenges lead to assumptions about how the system is operating and what to do about it. There have been a few examples of estimates of donor potential.

In the early 1990s, Evans put donor potential between 6,900 and 10,700 annually; in the early 2000s, Sheehy and colleagues put it at between 10,500 and 13,800 annually. This study will improve scientific knowledge, capability, and/or practice in the field by examining the deceased donor system and acknowledging and addressing the inherent complexity in this area of transplantation. The emphasis is on systems and understanding the complexity embedded to this area of transplantation. Despite past successes, many challenges persist in the health care system in terms of reducing the burden of injury and illness. There is a question about why these challenges continue to persist, despite our best efforts. This may be because our health interventions are fragmented or piecemeal in nature, rather than stemming from a whole-system view. It may be that compartmentalized or silo approaches are engrained in our infrastructure and the processes of most organizations and agencies. Conventional analytic approaches are generally incapable of addressing situations in which population's needs change over time and the associated risk factors, diseases, and health resources are in a continuous state of flux.

This study will examine the inherent dynamics and complexity associated with the deceased donation system. Dynamic and complex systems are not static and the systems' many stakeholders have competing interests. It can be hard to know how, when, and where to intervene, particularly since intervention produces consequences and resistance. Systems science can be helpful in such a situation. According to Mabry et al. (2008), systems science refers to bringing a perspective to problem-solving in which the problem space is conceptualized as a system of interrelated component parts. It is a perspective that considers connections among different components, plans for the implications of their interaction, and requires trans-disciplinary thinking as well as active engagement of stakeholders to govern the course of change.

There are misconceptions about systems science. It is not a rejection of traditional scientific views. Instead, systems thinking encompasses rather than seeking to replace it. Systems approaches are scientifically rigorous and seek to gain a holistic view of complex phenomena. Systems science is not a single discipline, but links disciplines to aid understanding and problem-solving. Systems science encompasses a range of methods and tools, including agent-based modeling, network analysis, soft-systems analysis, and discrete-event modeling.

This work is not new. The approach was developed by the computer pioneer Jay W. Forrester in the mid-1950s and presented in his book, *Industrial Dynamics*. UNOS is engaging with MIT around this work and will provide input to the project. The central tenant of system dynamics is that complex behaviors of organizations and social systems are the result of on-going accumulations of entities (i.e., people, assets, information, biological or psychological states) and of balancing and reinforcing feedback mechanisms.

Research questions being explored in these studies include four questions that could be considered when looking at the system: (1) Why are certain aspects of the deceased donor organ system changing? (2) Where is the deceased donor system headed if no new action is taken? (3) How else can the deceased donor system behave, if different decisions are made? (4) Who has the power to move the deceased donor system in a better, more sustainable direction? An advisory science committee will help advise this project. Computer simulations will be used to learn about donor potential based on certain changes and projected outcomes over time. The end result will be a report to HRSA about these findings.

Reports on Living Donor Studies: Kidney Paired Donor Exchange Pilot Project
Walter Graham, J.D., Executive Director, United Network for Organ Sharing

Mr. Graham stated that Kidney Paired Donation (KPD) matches living donors and their intended candidates with other living donors/intended candidate pairs when the living donors cannot donate to the person they initially hoped would receive their kidney. For example, Mary wants to give a kidney to Carlos, but they are incompatible. Shauna and Amir are also incompatible. These individuals cross, and give to the other pair.

UNOS is engaged with two types of kidney paired donations: two-way and three-way. (Larger, open-ended chains are occurring, but UNOS is not pursuing that currently.) These are the only options for matching included in the current proposal. All transplants must occur simultaneously, but do not need to take place at the same center. The pilot project's goals are to increase the opportunities for transplant for candidates with an incompatible donor and to create a large enough pool of pairs to be able to find a match for the largest number of participants, including hard-to-match candidates.

The purpose of the pilot is to test KPD on a national scale. The mechanism to be able to achieve a national system is integration with UNet. Moving from the pilot to a non-pilot system is purely based on the policy development related to KPD. The pilot itself has two phases. Phase I (the current phase) uses a "manual solution", which is limited in scope, uses coordinating centers, and is not integrated with UNet. Phase II will use an "automated solution" and be open to any program approved to perform living donor kidney transplants; phase II is integrated with UNet.

The coordinating centers are: Alliance for Paired Donation, Johns Hopkins Hospital, New England Program for Kidney Exchange (NEPKE), UCLA Medical Center/California Pacific Medical Center. They represent approximately 77 participating centers that are working through them, with representation from all 11 regions. It is expected that the coordinating centers will be able to receive Access databases and identify matches by October 2010.

HRSA was very concerned that OPTN did not have the best policies to protect the living donor. OPTN, therefore, is currently developing policies related to living donation, including KPD, which govern the pilot. A contract with each of the coordinating centers and individual transplant centers states that they will follow these rules. If they do not, they can be put through the usual professional standards and be removed from the pilot. HRSA wants these policies being developed

through the pilot to possibly apply to any KPD in the U.S. This is a big deal because, once OPTN develops policies, they could apply to anyone doing paired donations – even to those not participating in this pilot program.

The requirements for participation require that the transplant centers must: be designated as kidney transplant programs; be approved by OPTN to perform living donor kidney transplants; have a designated contact for the KPD Pilot Program; and agree to abide by all rules set forth in the "KPD Pilot Program Operational Guidelines." All 77 centers have agreed to abide by policies, although there was pushback when they were created. Candidates must be registered on the deceased donor kidney waiting list at the transplant center that wishes to enroll the candidate in the KPD Pilot Program and must consent, in writing, to participate in the KPD Pilot Program. Potential living donors must be at least 18 years old; meet the Living Donor Evaluation requirements; meet the consent process outlined in "The Resource Document for the Informed Consent of Living Donors"; consent, in writing, to participate in the Kidney Paired Donation Pilot Program; and not be currently listed as a living donor for any other candidate registered in the KPD system. Evaluation requirements follow the "Living Donor Committee's Resource Document for the Evaluation of Potential Living Kidney Donors." These are the guidelines that were published for public comment about a year ago that were controversial. They are in the process of being reworked with the American Society of Transplantation (AST) and North American Transplant Coordinators Organizations (NATCO) and new policies will be issued at the end of year.

Right now, there is a question about whether this is "organ allocation" or not. It is a legalistic concern and there have been on-going conversations with HRSA about it. If this is organ allocation, the activities may need to fall under the OPTN Final Rule. It is currently being approached like a matching algorithm and the Board has approved certain priority points.

Other hot topics in KPD include: How can you protect a potential living donor from coercion? How long should a bridge donor have to wait before finding a match? What happens if a donor changes his/her mind about donating? Other issues include travel and who travels and what happens if the organ gets lost in transit. (OPTN did a study that found 28 kidneys have been lost by airlines over last few years, for example.) How much tissue typing should be done and is the reduced risk of an unexpected positive cross-match worth the extra costs for typing? Who pays for the evaluation of the donor and other donor costs when the donor is not linked to a candidate? Who handles donor complications, follow-up, and data reporting, especially when the donor travels to donate?

Discussion

Dr. Fung commented that we read about huge numbers of paired donations; there was a case recently with something like 13 pairs. At some point, it will overwhelm a center. He asked when one should say a center cannot do more than "X" in a day. Mr. Graham responded that the policies UNOS is concerned with are about standards and polices. What the individual center does is up to the center. UNOS is participating in two- and three-way procedures, not those big chains.

However, there is no regulation about this of which he was aware. Mr. Durbin said there is nothing in the Final Rule. In fact, the Final Rule is about deceased donation and does not reflect living donor activities, so it will need to be changed at some point.

Dr. Gerber asked for clarification that everyone would be affected by the new policies and Mr. Graham reiterated that, once developed, the rules will apply to everyone. Dr. Wiesner asked if this was going to be applicable to liver. Mr. Graham responded that this has been talked about, and is probably just a matter of time.

Ms. Finn asked if there was any follow-up on psychological impact, and Mr. Graham answered that this was not part of the pilot project.

NKF's "End the Wait" Initiative
John Davis, CEO, National Kidney Foundation

Mr. Davis opened by saying that the National Kidney Foundation (NKF) was very glad to be a part of this. NKF advocated for ACOT when it was being contemplated, and suggested early members for first group. The Secretary had asked for a well-known patient and NKF nominated Larry Hagman who was appointed and really enjoyed the experience. NKF is patient advocacy organization; while NKF does a lot of science, at heart, it is a patient advocate. A lot of time, the NKF looks at the same data the scientists do but tend to think about it differently. The organization tends to ask, "What would the public think?"

It is obvious that the need is enormous. The problems that NKF's patients have and that the public sees with transplantation cannot be solved by one organization or even by the government. It has to be a collaboration. Some of these concepts were created because the NKF Board has opposed buying and selling organs in the U.S. and had to consider what else could be done. For that reason, NKF engages in "End the Wait," a collaborative and comprehensive effort between multiple organizations, the government, and individuals. The starting point is that there are proven and effective strategies exist that are not being used widely enough — strategies that could be done better or more broadly to help end the wait over the next decade. End the Wait has a communications strategy and initiatives in four areas that could be applied everywhere to: (1) Improve outcomes of first transplants; (2) Increase deceased donation; (3) Increase living donation; (4) Improve the system of donation and transplantation throughout the U.S.

(1) *Improve outcomes of first transplants*: NKF's number-one priority is to cover immunosuppressive drugs for the life of the transplant for anyone whose transplant was paid for by Medicare. The length of time has been extended a few times, but, a patient who is young and loses his/her Medicare coverage, does not get the immunosuppressive drugs anymore. NKF has been advocating for this for a long time and have gotten close to succeeding. It is just a matter of finding a reasonable way to pay for it.

NKF also wants to fully implement the Kidney Disease: Improving Global Guidelines (KDIGO) "Guideline on Care of the Transplant Recipient"; a clinical practice guideline published in 2009. It

has been the most-downloaded guideline NKF has written. It includes recommendation on post-operative care from the basis of doing better. It also recommends identifying and educating patients with Stage 4 chronic kidney disease (CKD) patients about their therapy options, staying healthy, and pre-emptive transplant before the initiation of dialysis. The belief is that this order could happen in a different way and that the mortality rate for the first 3 months of dialysis is too high. NKF also developed a free program for doctors on educating Stage 4 dialysis patients. Counseling and education for these patients is authorized and billable by the Medicare Improvements for Patients and Providers Act, which is a good incentive. The thinking is, talking more about these issues with patients will help patients be better recipients when they come for transplantation and/or dialysis.

(2) *Increase deceased donation*: NKF want to ensure that all costs are covered and to help train hospitals to help in this area. The donor family council members have said, it is not just asking that influences the decision to donate. It's everything that happens from the first visit to the Emergency Room to the interactions with the billing clerk, nurses. All of the staff the family sees influence their decision whether to donate or not. NKF wants to lower the discard rates. The public would ask, why are things are so different in different parts of the country? Should 10 percent of SCDs be discarded and what should the number be?

(3) *Increase living donation*: NKF thinks there are financial things that could be done to increase donation. Everything it costs the donor should be covered by someone else. The decision to donate should be medical and ethical, not financial. But, donors say they experience costs and that the costs present a barrier. We should be able to say it won't cost a thing, and be able to prove it. AST's program needs more money. Congress should put in more money, including funding for lost wages. Donors should have insurance after they donate, and should never be penalized by having donated. NKF is educating donors as well as medical practices. The public does not know much about living donation, so NKF supports a "Living Donation Breakthrough Collaborative" to stimulate best practices. Such a collaborative could look at issues that affect living donation everywhere but that are dealt with differently throughout the country.

(4) *Improve the system of donation and transplantation throughout the U.S.*: The disparity in availability throughout the country is still an issue. NKF is excited about the facilitation of paired matches; it makes a lot of sense and the public gets it immediately. Looking at the data, the public would ask, why is there so much variation around the country? This troubles the average person. The median time to transplant is 40.5 months, which is a long time when the mortality rate on dialysis is 20 percent a year. The variation ranges from 3 months to 55 months, and people wonder why that is. People call NKF every day wanting to know where they can move to get a transplant sooner, or if they should buy an organ overseas. There is even a lot of variation in DCD around the country.

Over the last year, NKF has been pleased that the debate has changed a bit. Congress and the media have also changed. Support is increasing and NKF has a number of congressional champions. People want to be involved. The immunosuppressive drugs bill has to be done by

Congress. As noted, the groundwork has been laid and it's just a question of payment and finding money. The 2010 Affordable Care Act prohibited pre-existing condition exclusions in health insurance coverage and that language included living donation. This ensures that all NKF patients, including living donors, cannot be discriminated against in obtaining/maintaining insurance coverage. This could have a big impact on coverage for dialysis and CKD patients, and other insurance provisions are being studied as well. NKF is also looking at using the tax code to help support donors and amending the Family and Medical leave Act so that living donors can be sure they will get their jobs back.

The "End the Wait" Executive Committee is agitating every day to do more and their deliberations will help. The Living Donor Council includes people who really want to make the world a better place. Several years ago, NKF held a conference on living donation and recommended that every program have a living donor advocate. This now happens, but those advocates do not really have a home, so NKF set up the Council of Professional Living Donor Advocates in 2010. NKF is thinking about hosting a global conference to follow up on the one being held this fall. The organization will also be working on implementing the KDIGO guidelines published in 2009.

NKF is also implementing its "Do you have a donor" effort into every program that treats Stage 4 CKD patients. NKF has talked with AST about holding free screenings for those who are at-risk for kidney disease, which would be similar to NKF's Kidney Early Evaluation Program (a free community-based screening program for those at risk for kidney disease) and test living donors for outcomes and help provide information about outcomes.

In summary, End the Wait is NKF's response to meeting the challenge of the organ shortage without resorting to unproven and potentially harmful practices. The components are all proven and are being used successfully, just not universally, in the U.S. NKF seeks to be a catalyst. NKF is neither able nor positioned to do all these things, but others are and the organization seeks to encourage them to examine their utility.

Discussion

Dr. Fung expressed interest in addressing the costs for deceased donation. In the 1990s, he was involved in a Pennsylvania effort to add funeral benefits for the cost incurred by a donor family, so they could have an open casket funeral. (Such a service is more expensive with a donor, because the cannulations have to be done separately.) There are concerns about the National Organ Transplant Act (NOTA) and the issue of valuable consideration. He asked why this could not be extended to deceased donor families since the added cost was incurred because of the donation. Mr. Davis responded that the NKF supports such a fund. NKF does not think that paying the real costs that are in addition to what the family would pay anyway violates the law. The family should not incur additional costs because they said yes to donation.

Ms. Levine added that the Federal government has not given an official position if the Pennsylvania law violated NOTA. It is up to the attorney general in that state to interpret this law. The Department of Justice interprets NOTA, and has given an opinion about paired exchange.

There could be a legislative fix, as occurred for paired exchanges, to clarify that certain things are not valuable considerations. Mr. Davis said that NKF does not want to limit the issue just to the Pennsylvania law. If the bill was to be re-opened, it would be a larger process. He said it is very frustrating that the money is there but not being used.

Mr. Green commented that, as a donor family member, he found that the most effective way to tell their story has been to work with media and asked what NKF was doing in that department. Mr. Davis reported that communications efforts are a big part of what NKF does every day and the End the Wait campaign kicked off with a huge segment in *USA Today*. NKF has had millions of media contacts on the campaign. He agreed he should include more about that effort in the presentation. Mr. Davis agreed that the media is very important and the more we can interest them, the better. He noted that, in pitching the transplant games this year, the media thought the event wasn't new – so NKF had to dream up "news" around it – people getting married, and so on.

Dr. Wiesner asked what NKF was doing about geographic disparities. Mr. Davis said NKF does not know the reasons behind the disparities or whose responsibility they are. NKF has talked to HRSA and transplant centers, and the issues remain. NKF seeks to understand what best practices can be applied elsewhere, like the collaborative, to reduce disparities. Dr. Wiesner commented that the discrepancy in living donor transplant by area is a really huge gap. Mr. Davis agreed and added that another group that should be engaged is the American Hospital Association (AHA). A lot of this is resource-driven, in terms of the number of operating rooms being used, etc. Dr. Wiesner commented that resources follow the dollars.

Dr. Barr said that NKF should be proud. Many people do not know that the drug coverage is only for kidneys and not for other organs. People need to know this and the AHA would probably work on this. Many ESRD patients have Medicare disability. This is a good model for all third party payers for transplant. Mr. Davis concurred that ESRD is a qualifier for Medicare and that Congress has not done that for other diseases. The language should be broadened to "transplants" rather than just kidney transplants. Ms. Levine noted there have been three ACOT recommendations on this: recommendations 27 and 28 are about immunosuppressant drugs and CMS coverage; and recommendation 36 is about legislative changes to give the Secretary the authority to identify and exclude practices from valuable consideration under NOTA.

Dr. Ettinger (by phone) said that this is a huge problem with pediatric patients who transfer to adult care at age 18 or 21 and lose Medicaid. These youth are no longer eligible and do badly as adults when they lose coverage. Dr. Scantlebury agreed that these patients fall through the cracks in the transition, and also suffer financially. Mr. Chianchiano said the NKF agreed about the need in this area. The Government Accountability Office conducted a study several years ago about immunosuppressant drugs in this transition period and found that the greatest risk of loss of organ was during the 3 years during which immunosuppressant drugs were covered. GAO concluded that the fix being discussed did not benefit the population and was not needed. Dr.

Ettinger said he was aware of this, but that many experts disagree this is not a problem. Mr. Chianchiano said that he also agreed, but commented that it was hard to change this regulation, when the GAO report contradicted what is being sought.

New Business, Expectations & Ideas for Future Meetings, New Work Groups

Dr. Scantlebury announced that this segment of the meeting would address new business, issues ACOT might want to address, work groups to form, and work group membership. (There are no current work groups.)

Ms. Cornell said she wanted to bring up something she had noted yesterday and that she felt ACOT should discuss. She commented there is a misalignment between HRSA's push for "every organ, every time", and CMS' oversight of transplant centers; the goals are virtually impossible to line up. She suggested that ACOT could get HRSA and CMS together to discuss their varying goals. The OPOs are pushing for every organ every time, but having a tough time placing those organs because the centers have gotten pretty conservative in the last few years, due to the impact on outcome and performance measures if they take certain organs. Ms. Finn added that that another consideration was the CMS mandate for organ procurement organizations and the expectation to do more DCD transplants; they are expected to do more of these organs and it's hard to meet some of the guidelines.

Dr. Barr agreed and said he also sought a better alignment between the CMS regulatory requirements and OPTN. ACOT can get people to the table better than any other entity. He added that it would be useful to include OPTN representation directly through UNOS at such a meeting because there it has so many knowledgeable people. This would impact program-specific reports and how data are collected. He commented that he was frankly surprised by the announcement that CMS and HRSA held monthly conference calls because it did not seem that they communicated very well from the transplant centers' perspective.

Dr. Ettinger (by phone) noted that the 800-pound gorilla in the room was that living donations are declining. It's clear that, year-by-year, we are losing living donors for a number of reasons. An ACOT sub-committee could consider this issue as well as the need to not incur extra, unreimbursed costs when making a living donation. He noted that the decline in living donors was very clear among pediatrics. Some think this occurred because children get good DCD kidneys at an earlier point, but this is not the case. In all ages, the living donor numbers are incrementally dropping and there is a need for practical ways to reverse that trend.

Mr. Alexander, OPTN/UNOS Board of Directors' President, spoke from the floor to say that OPTN absolutely wanted to participate in this effort. In addition to any disincentives that may exist, OPTN also would like to use the policy development process to develop more crosswalks between what CMS looks for (in terms of performance measures) and what OPTN/UNOS measures (in terms of compliance). UNOS seeks more alignment. Risk adjustment is the critical issue: finding ways to

encourage the use of more marginal organs without creating a disincentive either financially or in terms of patient survival. With ACOT's support, progress can be made here. Mr. Alexander closed by saying that OPTN/UNOS supported such efforts.

Mr. Orlowski, President of AOPO, spoke from the floor. He said that he had planned to speak during the public comment section on this issue. AOPA encourages any sort of dialogue or forum to bring these poorly aligned goals into alignment, so everyone pulled in the same direction. AOPO's member organizations want to maximize the number of organs transplanted and minimize deaths on the waiting list. The challenge is that transplant colleagues have the same goals but face different pressures and standards. They are not aligned. AOPO supports such a dialogue and would participate in any way possible to ensure that everyone was working towards the same goals ands standards. On the performance side, performance risk adjustment is key to manageable — and more incentivizing — goals. Ms. Glazier added that the SRTR needs to help too. Centers get designated or lose their designation, and patients lose access to care based on the interpretation of what is out there.

Dr. Scantlebury asked how to best to bring these interested parties together to discuss these issues. Dr. Fung commented that ACOT needed to clarify the points to address. This is such a complex area, a lot of these questions will require data but everyone has to come or it will not be possible to answer the questions raised.

Ms. Kelleher–Crabtree added that it seems that no one can answer why there are such geographic disparities. This is a good question for ACOT to help identify: what are the differences both in living donation (e.g., among regions and centers) and disparities?

Dr. Scantlebury outlined the following work groups and members volunteered to work on them:

- *Declining rates of living donation*: issues affecting this include reimbursement, costs for living donation, un-reimbursed deceased donor expenses. It was suggested that members talk after the September 27-28 meeting. Dr. Barr committed to forwarding the meeting invitation to ACOT members and encouraged other ACOT members to attend. Members:
    - Dr. Barr
    - Dr. Ettinger
    - Dr. Fung
    - Ms. Jones
    - Dr. Scantlebury
- *Fostering better alignment of CMS and HRSA goals*:
  Members:
    - Dr. Barr
    - Dr. Beaverson
    - Ms. Cornell
    - Dr. Cupples
    - Dr. Finn
- *Exploring geographic and other variations in organ distribution with respect to donors*: It was agreed it would be useful to invite outside speakers to talk about this in an effort to try to

understand these variations. Allocation schemes have an impact on living donor allocation and DCD.

Members:

- Dr. Barr
- Dr. Fung

- *Circulatory vs. cardiac definitions of death in order to expand deceased donors*:
  - No volunteers for this work group
- *OPTN's work to broaden distribution of livers*. Mr. Durbin sought ACOT's endorsement for OPTN's work to broaden the distribution of livers, particularly in light of congressional interest in this area and the possibility of hampering efforts to move forward. ACOT's support for OPTN's continued movement in that direction would be helpful.

  Members:
  - Dr. Barr
  - Dr. Beaverson
  - Dr. Fung

ACOT's next meeting will be late winter to early spring in 2011 (ACOT is chartered to meet twice per year). Ms. Stroup said she would survey ACOT members about their availability and interest in the various work groups and work groups would conduct activities along with any other ACOT business via conference call or web-based meetings. Former work groups have addressed topics such as living donations, decreasing the pediatric wait lists, and transplant tourism. Work groups will report back at the next ACOT meeting.

Summary of Breakthrough Collaborative Issues, Donation and Transplantation Community of Practice

Teresa M. Beigay, DrPH, Division of Transplantation/HRSA

Dr. Beigay said that she would discuss the evolution from the Breakthrough Collaboratives to the Donation and Transplantation Community of Practice (DTCP); national goals, performance, and awards; the power of partnerships; and activities undertaken to share knowledge, promote action, and improve performance. From 2003-2008, the U.S. undertook a series of Collaboratives, fast-paced, collaborative processes to engender rapid change: the Organ Donation Breakthrough Collaborative, the Organ Transplantation Breakthrough Collaborative, the Organ Donation and Transplantation Collaborative, and the Transplantation Growth and Management Collaborative. The time was right for change and remarkable results stemmed from these efforts.

Because this was a fast-paced process that required intensive action, the intent was not to go on indefinitely, but to create change and hard-wire it into organizational protocols and processes. Now these efforts are evolving into the "Donation and Transplantation Community of Practice." The DTCP was a perpetual motion machine designed to hard-wire best practices and look at the donation continuum more broadly, from designation through long-term patient and graft survival.

It starts when people get their drivers' license and decide to indicate they are organ donors on their license, and goes through talking to one's family, the donation, and what happens afterwards.

The DTCP has a local, regional, and national structure that creates a shared mission. Members include: donor hospitals, transplant centers, OPOs, donor designation professionals, tissue and eye banks, health care organizations, community organizations, and government.

The local structure is a DSA Action Team that includes one OPO, one or more transplant centers (depending on how many are in the DSA), hospitals, and other partners (coroners, medical examiners, funeral directors). The team can be a whole state, part of a state, or parts of different states. The Regional Action Teams bring action leaders from multiple DSAs together to share best practices with the common goal of improving regional performance and encouraging change on the DSA level. The DSA Action Teams are just building and only half are complete to date; 88 percent of teams have an OPO; 53 percent have a transplant center, and 55 percent have a donor hospital. There is a need for more transplant center and donor hospital participation.

DTCP has $4 million in funding; this is money well-spent given everything that is being done. In terms of funding history, the Division of Transplantation also sponsors several grant programs, which started around 1999. Improvements began to be seen at that time. When the Collaboratives started in 2002, there were more improvements. But, the number of donations has been leveling off and there is still work to do. There has been a decrease in the eligible and in-hospital deaths. The fact that there are fewer eligible deaths could stem from healthier lifestyles, and better trauma care. At the same time, there are changes in the proportion of eligibles. There is an increasing gap between total donors and those meeting eligible criteria.

The main national goal is to get a 75 percent collaborative conversion rate. This includes donors beyond eligible. The traditional conversion rate is the number of eligible donors that convert to actual donors. With the collaborative conversion rate, the number of donors who were beyond eligible donors are factored into both the numerator and denominator. There is steady improvement and current conversion rate of 74.8. Another goal is 3.75 organs transplanted per donor (SCD, DCD, ECD); this rate is increasing. The most recent data show the rate at 3.06. The proportion of DCD donors has reached and passed the national goal of 11 percent (currently at 11.1 percent). The DTCP is looking at whether donors are appropriately being defined as DCD and looking at their characterization.

These goals are accomplished using the power of partnership, including partnerships with national organizations that are non-traditional partners (e.g., critical care nursing folks, Society for Critical Care Medicine, American College of Health Care Executives). The Organ Donation and Transplantation Alliance is a key ally. It is an important part of the spirit, content, implementation of efforts to end deaths on the waiting list. Donate Life America is another partner. One of its key initiatives is increasing actionable donor designations by helping hospitals and OPOs honor donor designations. Sometimes first-person consent (e.g., through registry, drivers license) is not honored and it should be. DTCP is part of efforts to educate health care providers on this. The

Uniform Anatomical Gift Act (UAGA) clearly states that first-person consent should be honored and the vast majority of states have enacted it. AOPO is a valuable partner for training OPOs to honor first-person consent, quality improvement, and performance improvement. DTCP is also working with NATCO, the front-line professionals who are change agents in their hospitals.

On-going activities include meetings and the Healthcare Communities websites (formerly the Knowledge Gateway), which has a very active list serv. Participants have raised issues about aligning CMS and HRSA goals, and DTCP is working on this as well because it was raised on the list serv. Donor memorial walls have been a topic; and people have hosted webinars on issues raised in the list serv such as that.

The Transplant Center Task Force started in 2010 to improve the centers' engagement in partnership efforts. The Task Force will meet annually as well as monthly by conference call. It also provides DOT with access to a group of transplant community advisors. The DTCP is also giving awards to those with high performance (i.e., waiting time, survival, and waiting list deaths) at the upcoming National Learning Congress.

There is an annual DSA regional strategy meting at which the leaders of DSA Action Teams, Regional Collaborative Leaders, and State Teams meet to develop strategies to build effective teams and create powerful actions. The last meeting was in February 2010, the next will be in March 2011. The first Quality Improvement Task Force met in July 2010 to outline problems and develop ways to address them. The three broad areas the Task Force will look at are: (1) Using of OPTN and SRTR data and recommending improved "packaging" and dissemination; (2) Translating data into sound quality improvement strategies to improve OPO processes; and (3) Building on the strength of individual and national experiences and perspectives.

The Donor Management Task Force met in August 2010 to optimize the number of organs available for transplantation through effective donor management processes. Subcommittees focus on DSA practices, determination of death, and scientific knowledge about needed and available research. The CEO Summit will be held in September 2010 to examine, from a leadership perspective, how donation is integrated into the hospital environment. It will include OPO leaders, donor hospital leaders, and state hospital association leaders and will focus on the 50 highest-potential hospitals in the U.S. These are not a direct correlation with the 50 highest producing hospitals – they could perform better.

The 6th National Learning Congress is being held on November 3-4 in Gaylord Texas. Tracks will address partnering; supporting donor families and honoring the gift; stewarding the gift so the organs are recovered and transplanted; building desired capacity; addressing special issues in pediatric cases; and transplant and clinical care fellows.

The web–based education program includes regularly scheduled webinars and will be ramped up in size and scope. This will be a combination of free, live, streaming and stored content. The topics

will be relevant for all stakeholders and respond to the community's immediate needs. Finally, the donor potential study will be looking at the goals and how to translate new goals into action at the local and DSA levels.

Discussion

Dr. Barr said that, in the way ACOT heard about the NIH initiatives, it would be worth having time at the next meeting to talk about HRSA-funded initiatives through the Clinical Interventions to Increase Organ Procurement grant program, like the study on extracorporeal membrane oxygenation (ECMO) and organ quality and the yield for ECD. Many people may be unfamiliar with these efforts. Dr. Beigay responded that the Division has several grant programs, which have been active since 1999; public education efforts, which came in a few years later; clinical interventions to increase organ procurement, which focuses on issues that increase the number of organs procured from a clinical side; and the state donor registry support program, which helped build the registries. Several clinical program grants are on-going and the next round will be in 2011. A summary of some projects in different domains would a good idea for a future presentation.

Recommendation

Dr. Scantlebury announced that Dr. Fung wanted to present a possible recommendation for consideration by ACOT members. Dr. Fung said that the group has heard the concerns about access to liver and kidney allocation based on geographic disparities. He suggested that ACOT could affirm that the entity continues to stand by the HHS Final Rule's guidance to minimize arbitrary barriers. Dr. Fung read the draft statement for review by the members.

Ms. Levine reminded the group that ACOT recommendations are made to the Secretary. Dr. Fung suggested that SRTR and OPTN could review efforts to reduce disparities and progress on that issue. While ACOT did not seek to insert itself into others' work, it would be good to look at paradigms that do not include distribution as part of the DSA. Mr. Durbin suggested language on moving beyond arbitrary geographic barriers (e.g., state boundaries). He commented that there was the likelihood of congressional involvement on livers. A recommendation including ACOT's affirmation would be a useful tool for OPTN when it seeks to change allocation policies.

The group worked on the proposed recommendation language and created the following language:

Recommendation

Recommendation by the Advisory Committee on Organ Transplantation to the Secretary of Health and Human Services on the issue of geographic disparities in transplantation.

Background

At the August 20, 2010, ACOT meeting, review of liver and kidney transplant allocation statistics in the U.S. once again demonstrates persistent geographic disparities in patient access to transplantation. The ACOT believes that the current status does not comply with the intent of the OPTN Final Rule. The ACOT acknowledges that the OPTN has made efforts to revise the liver allocation policy to achieve broader geographic distribution of deceased donor livers with the goal of reducing mortality on the waitlist and equalizing access to transplantation for individuals most urgently in need of transplantation. The OPTN must seek to minimize inequities due to arbitrary geographic barriers to distribution.

Recommendation

The ACOT recommends that the Secretary take steps to ensure that the OPTN develop evidence-based distribution policies that are not determined by arbitrary administrative boundaries such as OPO service areas, OPTN regions, and state boundaries.

Dr. Fung made a motion to accept the recommendation; Dr. Wiesner seconded the motion. The motion passed with no members opposing or abstaining.

Public Comment

There was no comment from members of the public.

Closing

Dr. Scantlebury noted that Ms. Kelleher-Crabtree was leaving ACOT and thanked her for her service. ACOT appreciated Ms. Kelleher-Crabtree's work and for allowing the group to take advantage of her knowledge and background. Ms. Kelleher–Crabtree thanked HRSA and the group. She commented that, when she started as an ACOT member, she was a naïve transplant recipient but she was leaving as an educated consumer and involved member of the transplant community.

Dr. Scantlebury noted that Dr. Lorber is also leaving and thanked him for his service.

Dr. Scantlebury reviewed the process by which the work groups would conduct their activities and meetings, and over what time frame, in the coming months. The meeting adjourned at 2:30 pm.

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